Collin College - Continuing Education

Course Title: Data Science - Applied Machine Learning

Course Number: ITSE 1042

CourseDescription:
This course builds on the previous Data Science Certificate courses, going a bit deeper and more focused on applying concepts to real-world representative data to get a broad understanding of Machine Learning (ML).

Using the Python language, the course starts with review of language syntax and data-structures, mathematics, matrix manipulation, statistics and probability just for Data Science. Then jumping straight into Machine Learning.

The sequence in ML is understanding the data, cleaning, visualizing and then deciding which ML technique to use. Once the model is complete, understand how the model is going to be used and deploy it on your local machine.

Conclude the course with choosing a dataset from many open and free datasets and performing the ML steps, time permitting a presentation of the deployed model.

Software to install: if you are bringing your own laptop
Anaconda platform, which is more than just Python. It can be installed on Windows, Mac OSX and Linux machine, please select the appropriate OS that is on your laptop. Use the latest Anaconda version:
https://www.anaconda.com/download/
https://docs.continuum.io/anaconda/install/windows/

Reference Text:
Think Python, Second edition – Free PDF
http://greenteapress.com/wp/think-python-2e/

Suggested Course Prerequisite(s):
Completion of courses from Collin College
Data Science – Introduction
Data Science–Programming
Instructor approval

CourseObjectives:
What is Programming, How to think like a programmer, plan your solution, write pseudo code of your solution. Write code that will run and solve your problem.

Lesson Plan – by week or session

1. Introduction, Anaconda Installation, Anaconda Framework (Spyder, Jupyter Notebook)
2. Python Basics, Mathematics, Statistics and Probability Basics for DS
3. Numpy, Pandas
4. Scikit-Learn, SQL
5. Visualization – Matplotlib, Seaborn

6. Project – EDA, Analysis (Clean, Wrangle, Stats, Viz)
7. Machine Learning – Introduction, Supervised (Regression, Classification)
8. Machine Learning – Unsupervised, Deploying Model
9. Project – Pick from a list, independent work
10. Project – Completion and Conclusion - Presentation

Course Sessions: The list above indicates topics that will be covered during your course. Do not plan your personal calendar based on these sessions. Your instructor will give you a calendar for your class that will indicate specific topics, assignments, and days.

Method of Evaluation: Unless otherwise stated, course completion is evaluated on the basis of attendance. Students must be in attendance 90% of the class time in order to be considered a successful completer of the course.

Americans with Disabilities Act: Collin College will adhere to all applicable federal, state and local laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal opportunity. It is the student's responsibility to contact the ACCESS office, SCC-G200 or 972.881.5898 (V/TTD: 972.881.5950) to arrange for appropriate accommodations.